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Impact of Drain Usage on Postoperative Outcomes in Thyroidectomy Patients: Pain Intensity and Hospital Stay Duration

ABSTRACT

Background: Thyroidectomy is a widely adopted surgical procedure for treating thyroid diseases. Despite its frequent application, postoperative complications like vocal cord paralysis, hypocalcemia, hematoma, and seroma can occur. A debate on the use of drains after thyroidectomy has persisted in the surgical community, with concerns about potential bleeding, occlusion, and the actual benefit of drains.

Methods: A retrospective study was conducted on 122 patients who underwent thyroidectomy from January 2022 to May 2023. Patients were categorized into 2 groups: those with drains (n = 62) and those without drains (n = 60). Metrics like surgical duration, postoperative pain, length of hospital stay, and complications were recorded. A visual analog scale was employed to measure postoperative pain. Statistical analysis was performed using Statistical Package for the Social Sciences Statistics software, version 28.0.

Results: There was no significant difference between the 2 groups in terms of age, gender, indication for surgery, and various complications. However, patients with drains experienced significantly higher pain scores on the first postoperative day. Furthermore, the group with drains had a notably longer duration of hospital stay compared to the group without drains.

Conclusion: Our findings suggest that drain usage after thyroidectomy may intensify postoperative pain and extend hospital stays. Surgeons should meticulously evaluate the benefits and drawbacks of drain insertion in thyroidectomy procedures, as routine usage might be unnecessary.

Keywords: Drainage, hospital stay duration, postoperative complications, thyroidectomy, visual analog scale

INTRODUCTION

Thyroidectomy is a commonly utilized procedure in the surgical treatment of thyroid diseases. It is considered an effective method for the treatment of both benign and malignant thyroid diseases.[1] However, various complications can arise following such surgical interventions. Complications such as vocal cord paralysis, hypocalcemia, hematoma, and seroma can influence the management of the postoperative period.

Many surgeons prefer to use drains after thyroid surgeries to prevent potential dead spaces and to drain accumulations that might arise from blood or serum.[2] This is often evident with frequent fluid drainage in the postoperative period. Bleeding can sometimes lead to life-threatening situations, necessitating emergency interventions. This potential risk has led many surgeons to standardize the use of drains after thyroid operations. Nonetheless, even in subtotal thyroidectomies, postoperative bleeding is a relatively rare complication, observed in only 0.3%-1% of patients undergoing thyroidectomy.[3] Some studies in the literature highlight instances where drains become occluded with clotted blood, and in such situations, significant bleeding may go unnoticed.[4-7] Additionally, numerous studies suggest that the use of drains after thyroid surgery does not confer a clear benefit.[8-11]

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MATERIAL AND METHODS

This study included 122 patients who underwent a total thyroidectomy or lobectomy between January 2022 and May 2023. Ethical committee approval was obtained for the study, and informed consent was acquired from all patients. Patients with coagulopathies and those who underwent central or lateral neck dissection in conjunction with thyroidectomy were excluded from the study. Patients were divided into 2 groups: those with drains (n = 62) and those without drains (n = 60).

Thyroidectomies were performed using the capsular dissection technique. In the group where drains were placed, the drains were inserted just before wound closure.

In this study, parameters such as duration of the surgery, postoperative pain, length of hospital stay, and complications (wound infection, seroma, bleeding, hematoma, recurrent laryngeal nerve paralysis, and transient hypoparathyroidism) were recorded. The surgical duration was defined as the time from the initial incision to the placement of the final suture. Postoperative pain was assessed on the first postoperative day using a VAS, ranging from 0 (no pain) to 10 (worst pain imaginable). This study was approved by Ethics committee of University of Health Sciences, Ümraniye Training and Research Hospital (Approval No: 289, Date: 10.08.2023). Informed consent was obtained from the patients who agreed to take part in the study.

Statistical Analysis

Mean, standard deviation, median, minimum, maximum value, frequency, and percentage were used for descriptive statistics. The distribution of variables was checked with Kolmogorov–-Simirnov test. Independent samples *t*-test and Mann–-Whitney *U*-test were used for the comparison of quantitative data. Chi-square test was used for the comparison of the qualitative data. Statistical Package for the Social Sciences, version 28.0 (IBM SPSS Corp.; Armonk, NY, USA), was used for statistical analyses.

MAIN POINTS

- The use of drains following a thyroidectomy can increase postoperative pain and extend the hospital stay.
- There was not a significant difference between the groups with and without drains in terms of age, gender, surgical indications, and certain complications.
- Patients with drains experienced more intense pain on the first postoperative day. This increase in pain can be attributed to the need for an additional incision for the drain, the sensation of a foreign body from the drain, and slight movements of the drain causing local trauma during neck motion.
- Patients with drains had a significantly longer duration of hospital stay compared to those without drains. This could result in added costs and challenges for both patients and health-care providers.
- The study suggests that the routine use of drains might not be necessary in thyroidectomy procedures, emphasizing the need for a careful assessment of the pros and cons of drain usage by clinicians.

RESULTS

A total of 122 patients, comprising 29 males and 93 females, who underwent thyroidectomy surgery were included in the study. The mean age of the patients was 49.2 ± 14.3 years. Surgical indications were multinodular goiter (MNG) in 69 patients (56.6%), toxic MNG in 11 patients (9.0%), Graves' disease in 17 patients (13.9%), and differentiated thyroid cancer in 25 patients (20.5%). Vocal cord paralysis was observed in 13 patients (10.7%); 9 (9.0%) of the vocal cord paralysis occurrences were transient and 2 (1.6%) were permanent. Hypocalcemia was detected in 31 patients (25.4%), with only 2 patients (1.6%) developing permanent hypocalcemia. Hematoma and seroma were observed in

Table 1. Clinical and Demographic Information of the Patients

	Minimum–Maximum	Median	Mean ± SD
Age	18.0-86.0	51.0	49.2 ± 14.3
Gender			29 ± 23.8%
Male			93 ± 76.2%
Female			
Indication			69 ± 56.6%
Simple MNG			11 ± 9.0%
Toxic MNG			17 ± 13.9%
Graves			25 ± 20.5%
DTC			
Vocal cord paralysis			109 ± 89.3%
(–)			13 ± 10.7%
(+)			2 ± 1.6%
Permanent			11 ± 9.0%
Temporal			
Hypocalcemia			91 ± 74.6%
(–)			31 ± 25.4%
(+)			2 ± 1.6%
Permanent			29 ± 23.8%
Temporal			
Hematoma			117 ± 95.9%
(–)			5 ± 4.1%
(+)			
Seroma			117 ± 95.9%
(–)			5 ± 4.1%
(+)			
Drain			60 ± 49.2%
(–)			62 ± 50.8%
(+)			
POD 1 pain VAS	2.0-9.0	5.5	5.4 ± 2.0
Hospitalization duration	1.00-5.0	2.0	1.9 ± 0.92

DTC, differentiated thyroid carcinoma; MNG, multinodular goiter; POD, postoperative day; VAS, visual analog scale.

Table 2. Comparison of Clinical and Demographic Outcomes Between Groups

	Drain (−)		Drain (+)			
	Mean ± SD	Median	Mean ± SD	Median	*P*	
Age	48.2 ± 15.2	50.5	50.1 ± 13.4	51.5	.472	m
Gender						
Male	14 ± 23.3%		15 ± 24.2%		.911	χ^2
Female	46 ± 76.7%		47 ± 75.8%			
Indication						
Simple MNG	33 ± 55.0%		36 ± 58.1%		.962	χ^2
Toxic MNG	6 ± 10.0%		5 ± 8.1%			
Graves	8 ± 13.3%		9 ± 14.5%			
DTC	13 ± 21.7%		12 ± 19.4%			
Vocal cord paralysis						
(−)	54 ± 90.0%		55 ± 88.7%		.817	χ^2
(+)	6 ± 10.0%		7 ± 11.3%			
Permanent	1 ± 1.7%		1 ± 1.6%			
Temporal	5 ± 8.3%		6 ± 9.7%			
Hypocalcemia						
(−)	46 ± 76.7%		45 ± 72.6%		.604	χ^2
(+)	14 ± 23.3%		17 ± 27.4%			
Permanent	1 ± 1.7%		1 ± 1.6%			
Temporal	13 ± 21.7%		16 ± 25.8%			
Hematoma						
(−)	58 ± 96.7%		59 ± 95.2%		.675	χ^2
(+)	2 ± 3.3%		3 ± 4.8%			
Seroma						
(−)	57 ± 95.0%		60 ± 96.8%		.621	χ^2
(+)	3 ± 5.0%		2 ± 3.2%			
POD 1 Pain VAS	3.9 ± 1.3	4.0	6.9 ± 1.3	7.0	**.000**	m
Hospitalization duration	1.3 ± 0.47	1.00	2.6 ± 0.73	2.0	**.000**	m

Values in bold indicate statistical significance.
DTC, differentiated thyroid carcinoma; m, Mann–Whitney; MNG, multinodular goiter; POD, postoperative day; VAS, visual analog scale.

5 patients each (4.1%). Drains were used in 62 patients but not in 60 patients. The average hospital stay duration was 1.9 ± 0.92 days. Moreover, the mean visual analog scale (VAS) score for pain assessment on the first postoperative day was 5.4 ± 2.0 (Table 1).

There was no statistically significant difference ($P > .05$) in the ages of patients between the groups with and without drains. The gender distribution between the groups with and without drains did not show a significant difference ($P > .05$). The distribution of surgical indications between the 2 groups was not significantly different ($P > .05$). The incidence of vocal cord paralysis between the groups with and without drain use showed no significant difference ($P > .05$). The rates of hypocalcemia, hematoma, and seroma did not differ significantly ($P > .05$) between the 2 groups. The postoperative pain VAS score in the group with drains was significantly higher ($P < .05$) than in the group without drains. The hospitalization duration value in the group with drains was significantly longer ($P < .05$) than in the group without drains. (Table 2).

DISCUSSION

In this study, we assessed the impact of drain usage on postoperative outcomes in patients undergoing thyroidectomy. Our findings did not reveal any significant difference between the group with drains and the group without drains in terms of key parameters such as age, gender, indication, transient vocal cord paralysis, permanent vocal cord paralysis, transient hypocalcemia, and permanent hypocalcemia. These results indicate a demographic and clinical similarity between the 2 groups. The most pronounced effect of drain use was observed on postoperative pain and the duration of hospital stay.

Patients with drains exhibited significantly higher pain intensity on the first postoperative day compared to those without drains. This observation aligns with the existing literature. Wang et al studied 104 thyroidectomy patients, 52 of whom had drains and 52 did not, following lobectomy and central neck dissection. They concluded that those without drains experienced notably less pain and foreign body sensation.[12] Deveci et al,[13] in their study of 400 patients, used drains in 200 and omitted drains in the other 200, finding pain scores to be significantly lower at the postoperative şixth hour and first day in the latter group. A review exploring drain usage in thyroidectomy revealed that patients with drains experienced more postoperative pain than those without.[14] We theorize that the necessity for an additional incision for the drain, the sensation of a foreign body because of

the drain, and minor movements of the drain during neck motion causing local trauma could be probable reasons for increased postoperative pain.

In this study, the duration of hospital stay was significantly longer for patients with drains than those without. This is consistent with current literature. Ishaq et al[15] reached a similar conclusion, stating that patients with drains had a notably prolonged hospital stay. George et al,[16] in a prospective randomized controlled trial with 54 thyroidectomy patients, found a longer hospital stay for the group with drains.[16] Maroun et al,[17] in a national cohort study involving 11636 patients, deduced a similar result, asserting that drain usage not only failed to prevent hematoma but also extended hospital stays.[17] The presence of a drain might pose an additional discomfort for patients, leading some to prefer staying longer in the hospital to await its removal. The need to monitor for potential complications from the drain and the process of drain removal itself can prolong hospitalization. This could impose additional costs and challenges for both patients and health-care providers, hence the risks and benefits of drain usage should be carefully evaluated.

This study does have some limitations. First, due to its retrospective design, we cannot dismiss the presence of potential biases. Secondly, the study was conducted at a single center, implying that multicenter studies might be necessary to evaluate complications related to drainage. Lastly, the VAS used is subjective and relies on the patient's evaluation.

Our study has highlighted that the use of drains after thyroidectomy might increase postoperative pain and prolong the duration of hospital stay. These findings should prompt clinicians to make a careful assessment of the pros and cons of drain usage. We believe that the use of drains might not be necessary in routine thyroidectomy procedures.

Ethics Committee Approval: This study was approved by Ethics committee of University of Health Sciences, Ümraniye Training and Research Hospital (Approval No: 289, Date: 10.08.2023).

Informed Consent: Informed consent was obtained from the patients who agreed to take part in the study.

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REFERENCES

1. Rosato L, Avenia N, Bernante P, et al. Complications of thyroid surgery: analysis of a multicentric study on 14,934 patients operated on in Italy over 5 years. *World J Surg*. 2004;28(3):271-276. [CrossRef]
2. Woods RSR, Woods JFC, Duignan ES, Timon C. Systematic review and meta-analysis of wound drains after thyroid surgery. *Br J Surg*. 2014;101(5):446-456. [CrossRef]
3. Thomusch O, Machens A, Sekulla C, et al. Multivariate analysis of risk factors for postoperative complications in benign goiter surgery: prospective multicenter study in Germany. *World J Surg*. 2000;24(11):1335-1341. [CrossRef]
4. Al-Habsi AS, Al-Sulaimani AK, Taqi KM, Al-Qadhi HA. Comparison of postoperative drain insertion versus no drain insertion in thyroidectomies: retrospective case-control study from the Sultan Qaboos University Hospital, Muscat, Oman. *Sultan Qaboos Univ Med J*. 2016;16(4):e464-e468. [CrossRef]
5. Promberger R, Ott J, Kober F, et al. Risk factors for postoperative bleeding after thyroid surgery. *Br J Surg*. 2012;99(3):373-379. [CrossRef]
6. Suslu N, Vural S, Oncel M, et al. Is the insertion of drains after uncomplicated thyroid surgery always necessary? *Surg Today*. 2006;36(3):215-218. [CrossRef]
7. Canu GL, Medas F, Cappellacci F, et al. Risk factors for postoperative cervical haematoma in patients undergoing thyroidectomy: a retrospective, multicenter, international analysis (REDHOT study). *Front Surg*. 2023;10:1-8. [CrossRef]
8. Neary PM, O'Connor OJ, Shafiq A, et al. The impact of routine open nonsuction drainage on fluid accumulation after thyroid surgery: a prospective randomised clinical trial. *World J Surg Oncol*. 2012;10(72):72. [CrossRef]
9. Sanabria A, Carvalho AL, Silver CE, et al. Routine drainage after thyroid surgery - A meta-analysis. *J Surg Oncol*. 2007;96(3):273-280. [CrossRef]
10. Soh TCF, Ong QJ, Yip HM. Complications of neck drains in thyroidectomies: A systematic review and meta-analysis. *Laryngoscope*. 2021;131(3):690-700. [CrossRef]
11. Abboud B, Sleilaty G, Rizk H, Abadjian G, Ghorra C. Safety of thyroidectomy and cervical neck dissection without drains. *Can J Surg*. 2012;55(3):199-203. [CrossRef]
12. Wang Z, Qi P, Zhang L, et al. Is routine drainage necessary after thyroid surgery? A randomized controlled trial study. *Front Endocrinol (Lausanne)*. 2023;14:1148832. [CrossRef]
13. Deveci U, Altintoprak F, Sertan Kapakli M, et al. Is the use of a drain for thyroid surgery realistic? A prospective randomized interventional study. *J Thyroid Res*. 2013;2013:285768. [CrossRef]
14. Portinari M, Carcoforo P. The application of drains in thyroid surgery. *Gland Surg*. 2017;6(5):563-573. [CrossRef]
15. Ishaq I, Iqbal J, Ajmal R, Afzal M, Munir K. The role of drainage after thyroid surgery. Is it mandatory ? *Ann Punjab Coll*. 2008;2(1):46-49.
16. George NM, Chitrambalam TG, Christopher PJ, Marlecha M, Selvamuthukumaran S. To drain or not to drain following thyroidectomy. A prospective, randomized study. *Saudi Med J*. 2023;44(5):518-521. [CrossRef]
17. Maroun CA, El Asmar M, Park SJ, et al. Drain placement in thyroidectomy is associated with longer hospital stay without preventing hematoma. *Laryngoscope*. 2020;130(5):1349-1356. [CrossRef]